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Amendments to the Claims

1. (Canceled)
2. (Canceled)
3. (Canceled)
4. (Canceled)
5. (Currently amended) A method for cleaning a surface within a vessel, the vessel having a wall with an aperture therein, the method comprising:
introducing fuel and oxidizer to a conduit, the introducing comprising:
introducing a first fuel and a first oxidizer forming a first fuel/oxidizer mixture;
and
introducing a second fuel and a second oxidizer forming a second fuel/oxidizer mixture, the second mixture being less detonable than the first fuel/oxidizer mixture;
initiating a reaction of the fuel and oxidizer so as to cause a shock wave to impinge upon the surface; and
introducing a pressurized purge gas to the conduit.
6. (Original) The method of claim 5 performed in a repeated sequential way.
7. (Original) The method of claim 5 wherein:
the reaction comprises a deflagration-to-detonation transition.
8. (Original) The method of claim 5 wherein:
the purge gas comprises in major portion air.
9. (Original) The method of claim 5 wherein:
the purge gas is introduced through a purge gas port in an upstreammost 20% of a flowpath length within the conduit.

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10. (Canceled)
11. (Currently amended) The method of claim ~~10~~ 5 wherein:
the second oxidizer is less oxygen-rich than the first oxidizer; and
the second fuel/oxidizer mixture is introduced as a mixture.
12. (Currently amended) The method of claim ~~10~~ 5 wherein:
the second fuel/oxidizer mixture provides a slower reaction chemistry than a reaction
chemistry of the first fuel/oxidizer mixture.
13. (Currently amended) The method of claim ~~10~~ 5 wherein:
a major portion of said first fuel/oxidizer mixture is provided before a major portion of
said second fuel/oxidizer mixture is provided.
14. (Currently amended) The method of claim ~~10~~ 5 wherein:
a major portion of said first fuel/oxidizer mixture is provided after a major portion of said
second fuel/oxidizer mixture is provided.
15. (Canceled)
16. (Canceled)
17. (Previously presented) The method of claim 5 wherein:
the vessel is a coal- or oil-fired furnace.
18. (Previously presented) The method of claim 5 wherein:
the surface is of a tube bundle.
19. (Currently amended) The method of claim 5 wherein:
a baseline flow of the purge gas is maintained between charge/discharge cycles of the

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conduit so as to prevent gas and particulate from the vessel from infiltrating upstream and to assist in cooling of the conduit.

20. (New) A method for cleaning a surface within a vessel, the vessel having a wall with an aperture therein, the method comprising:

introducing fuel and oxidizer to a conduit, the introducing comprising:

introducing a first fuel and a first oxidizer forming a first fuel/oxidizer mixture;

and

introducing a second fuel and a second oxidizer forming a second fuel/oxidizer mixture, the second mixture being less detonable than the mixture; and

initiating a reaction of the fuel and oxidizer so as to cause a shock wave to impinge upon the surface.

21. (New) The method of claim 20 wherein:

said introducing the first fuel and the first oxidizer is through one or more associated first ports;

said introducing the second fuel and the second oxidizer is through one or more associated second ports; and

said introducing the first fuel and the first oxidizer fills a volume of the conduit extending beyond the second ports ports.

22. (New) The method of claim 20 wherein:

said volume is 1-20% of a total volume of the conduit.

23. (New) A method for cleaning a surface within a vessel, the vessel having a wall with an aperture therein, the method comprising:

introducing fuel and oxidizer to a conduit, the conduit having an upstream end and a downstream end, the introducing forming:

a first mixture of a first fuel and a first oxidizer ; and

a second mixture of a second fuel and a second oxidizer, the second mixture being

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downstream of the first mixture and less detonable than the first mixture; and
initiating a reaction of the fuel and oxidizer so as to cause a shock wave to impinge upon
the surface.

24. (New) The method of claim 23 wherein:
the second oxidizer is less oxygen-rich than the first oxidizer; and
the first fuel and second fuel are the same.
25. (New) The method of claim 23 wherein:
the fuel and oxidizer fill 100% of the conduit.